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CIA RESPONSE TO QUESTIONS RELATED TO
WESTERN PACIFIC AND INDIAN OCEAN
BASE STUDY

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Soviet Efforts in New Ship Technology--
Propulsion and Hull Forms

Can it be foreseen when or if the USSR might develop
80-100 knot merchant ships or naval vessels?

1. There is considerable evidence that the Soviets have an energetic research and development program directed toward achieving high speeds in oceangoing marine vehicles. This program is under way in the Ministry of Shipbuilding and was fairly well organized by 1964. Some of the research effort of the Soviets' foremost aeronautical research center has been tapped to solve the aero-hydrodynamic problems involved.

2. The Soviet approach is quite similar to that of the West and calls for continuation of hydrofoil and air cushion vehicle development, coupled with an attempt to introduce new forms using the ram-wing and wing-in-ground-effect concepts. The Soviet output of theoretical papers is impressive in quantity, but not in quality.

3. Authoritative Soviet naval officers are aware of the naval missions that vehicles of the hydrofoil, air cushion, and ram-wing type could carry out. The leading Soviet naval seaplane designer advocated as early as 1963 the construction of 1,000-ton seaplanes to fill the "speed gap" in marine transportation.

4. Hydrofoil craft adequate for river service first appeared in 1957, and by 1965 nine civil types having gross weights up to 120 tons and one naval coastal patrol type of about 50 tons had reached operational status. Two different prototypes of air cushion vehicles that appeared in 1962 have been followed by two further models, one of which appears to have the interest of the Soviet Navy. These do not appear to be equal to Western types in performance, however.

5. In the summer of 1967 a vehicle 300 feet long having a large, low-aspect area wing and a large aerodynamic empennage was seen in the Caspian Sea, apparently being readied for underway trials. This vehicle could be an advanced marine craft of the ram-wing, wing-in-ground-effect, or low-flying-seaplane type. This vehicle may represent an attempt to beat the West in achieving an operational model of a very large and very high speed marine vehicle.

6. In sum, we estimate that sometime during 1970-80 the USSR will probably develop merchant and naval vessels capable of speeds of 100 knots or more. These would of course be of the nondisplacement types referred to above. Assuming the solution of problems connected with stability, control, and powering, we would expect a few vehicles to be available by 1975.

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Soviet Merchant Ship Technology

What will be the status of automation in ship operations, loading and unloading, containerization by 1980?

1. In quality and extent of application of mechanization and automation of merchant ship operations, the USSR probably is on a par with all but the most progressive of the leading maritime nations. The most modern fleets have ships whose control equipment is more advanced and more sophisticated than that aboard any Soviet merchant ships currently operating on the high seas.
2. Soviet emphasis in this field is about the same as that of other maritime nations--mechanization and centralization of the reporting and recording of performance data on steam and diesel power plants, mechanization of navigational computations, and installation of remote control devices for operation of the power plant from the bridge. These developments reflect progress toward automation, rather than pure automation of ship operations.
3. The USSR is engaged in considerable research on ship automation. For a number of years, the Soviets have been using a Caspian Sea tanker, Inzhener Pustoshkin, as a floating test bed for experiments in shipboard automation. The greatest emphasis, as in the free world, has been on automation of control over the operation of main and auxiliary engines. Equipment installed in this ship has made possible a reduction in the size of its crew from 33 to 23 men. No significant reductions resulting from automation have yet occurred aboard any of the ships of the operating fleet.
4. During the period 1970-80, the USSR presumably will attempt to keep pace with other leading maritime nations in the automation of ship operations. Some of the ships acquired by the Soviet merchant fleet during this period will have extensive automation and by the end of the period such ships should make up a substantial part of the fleet.

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5. Most of the modern dry cargo ships in the Soviet merchant fleet are general purpose vessels, capable of carrying grain on one leg of a voyage and returning with general cargo. The cargo handling gear on these ships is as good as that on comparable Western ships. Many of the more progressive Western dry cargo fleets include dry cargo ships designed for specific trade routes or the movement of particular classes of cargo. All of these ships are better equipped than the general purpose Soviet ships for the loading and unloading of the types of cargo they are intended to carry. The specialized vessels include container ships, ships with heavy lift booms with capacities between 150 and 300 tons, ships with side openings for forklift trucks and elevators for speedy handling of general cargo, and roll-on/roll-off ships for wheeled vehicles.

6. The Soviets are now building roll-on/roll-off type ships. To date, all units have gone to the navy, and none has yet been delivered to the merchant fleet. There is no indication of any Soviet intention to acquire ships with specialized cargo handling equipment comparable to that on the Western ships mentioned above during the current five-year plan period, which ends in 1970. Soviet acquisition of such ships during 1971-80 would most likely be a function of need rather than of ability to make or purchase them.

7. For many years the USSR has carried small quantities of cargo in containers on conventional dry cargo ships. These containers have been small (up to five tons) and designed primarily for rail use. The USSR has no seagoing ships designed for the movement of containers and no plans to build any through the end of 1970. The Soviets are developing a series of 10- and 20-ton containers that will meet the requirements of the International Standardization Organization. They plan to equip Leningrad, Riga, and Odessa--ports that are important in Soviet trade with Western Europe--with container-handling equipment. At the same time, plans are under way to adapt several ships for the transport of containers between Riga and Rotterdam. Whether the USSR acquires container ships during the period 1971-80 will depend largely on the number of trade routes on which there are significant movements of general cargo in both directions--a prerequisite for profitable container operations.

Satellite Communications

What is the likelihood that the Soviet Union will have the capability to incapacitate or seriously degrade communications based entirely on satellite relay, by 1980?

The USSR has the capability, at present, to incapacitate or seriously degrade communications relayed by the communication satellites being used by the US. Despite future sophistication of communication satellite technology there seems to be no cogent reason why the Soviets should not continue to enjoy this capability.

CPR Industrial Projections

What are the projections of Chinese industrial capacities and capabilities to 1980 and their related military limitations and implications?

1. The ambitions which have produced the advanced weapons program in Communist China will almost certainly remain to some degree during the period of this projection, as will the competition with the USSR in the Communist world and the hostility toward the US. These factors will continue strongly to affect the allocation of resources, at some expense to measures required to achieve sustained economic growth. There are important limitations, however, as to how far and how long the regime can go on neglecting development of the general industrial base.

2. The underlying assumptions for this industrial projection are as follows:

a. Development and production of military hardware will continue to be heavily favored in the allocation of resources.

b. A large increase in the already substantial proportion of the scarce industrial and technological resources now devoted to military purposes would severely cramp the growth of the economy, which in turn would severely cramp future weapons development.

c. Consequently, for the entire period through 1980 the Chinese cannot sustain an expansion in production of military hardware much in excess of the growth in heavy industrial production.

3. Assuming that political turmoil such as that of the past year does not recur and that food crises will not develop to the extent that it will be necessary to divert a large portion of Chinese resources to the improvement of agricultural output, industrial production in the period through 1980 may grow at an average annual rate of five to

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six percent. This rate of growth is less than that in 1963-66 because the capacity idled by the collapse of the Leap Forward was largely taken up by the end of 1966; thus future growth in industry will depend primarily on additions to plant capacity. If Chinese industry does grow at an annual rate of five to six percent, the productive capacity of industry in 1980 will be roughly double the level of 1966.

4. Within industry, the various sectors are likely to continue to grow at different rates. Heavy industrial production may grow at seven to eight percent per year, in which case in 1980 it would be two and a half to three times the level of 1966. Output in the military and related industries will probably grow at the same pace or only slightly faster. Notable gains in productive capabilities will be made in such priority segments of industry as military machine building, electronic equipment, petrochemicals, and special metals, but a substantial part of industry--particularly the plants producing consumer goods--will still be plagued with outdated equipment and technology.

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Satellite Surveillance

What is the likelihood of the development by the Soviets of an all-weather satellite ship surveillance system by 1980 or soon thereafter?

The USSR has tested nearly all of the components required to develop a satellite ship surveillance system. Whether the Soviets develop such a system in the 1970's depends on what they consider the threat to be. It presently appears that the threat will be primarily from submarines. Since satellites do not appear to be able to detect submarines, we estimate that the USSR will not develop such a system in this time period.

Estimate One

What are the possible political and economic strategies of the USSR and CPR in the Afro-Asian area in 1970-80?

1. The USSR and China are expected to expand their economic offensive in the Afro-Asian area, as elsewhere in the less developed world, during the period 1970-80. (For the present purpose, the Afro-Asian area is defined to include only countries bordering on or in the Western Pacific and Indian oceans.) The motives for this effort are the familiar ones of enhancing political influence and national security and weakening Western positions. To this end, they are interested in broadening their foreign economic relationships, creating situations of economic dependence on them, promoting the spread of socialist institutions, and gaining adherents for their political and economic policies.

2. The Afro-Asian area obviously has considerable strategic interest for both the USSR and China. Its proximity probably leads them to regard the Afro-Asian area as one in which their influence should be greater than it is. Both countries probably feel that certain countries in the area are, or could be made, fertile grounds for efforts to promote Communist ideology and foreign policy. Both countries have obvious reasons for wishing to enlarge their influence in such populous countries as India and Indonesia. So long as the ideological and political divisions continue between the USSR and China, each will be interested in building up its presence and influence in the countries of the area at the expense of the other.

3. The USSR can be expected to intensify its efforts to develop economic relations with Afro-Asian countries. The Soviet economy has the capability to support a larger aid program at present than it is supporting, and this capability will increase greatly by 1980. Soviet aid extensions and deliveries will not necessarily increase correspondingly, however. By the 1970's, the

Soviet leadership may have some second thoughts about the political value of the program. A reappraisal of the program may also be prompted by growing popular opposition to it.

4. The Soviet approach to aid commitments seems to be largely opportunistic, reflecting sophisticated long-term views of the political advantages to be gained. Additional commitments thus are likely to be inhibited very little by the present political complexion of the recipient. The size of Soviet aid commitments during 1970-80 probably will in some instances be limited not by the ability and willingness of the USSR to provide aid but by the ability of the recipient to absorb it efficiently and the recipients' concern not to become overly dependent on the USSR.

5. In the past, the Afro-Asian countries have received about one-third of Soviet aid extensions. This proportion probably will at least be maintained during 1970-80 and may well rise to something like one-half. New commitments of Soviet aid to Afro-Asian countries could easily average \$400 million to \$500 million annually during 1970-80. The value of economic aid deliveries should be substantially larger than the recent annual average of some \$140 million.

6. The USSR probably will make further substantial aid commitments--possibly well in excess of \$1 billion--to India in support of the two five-year plans scheduled to be initiated during 1970-80. The Soviet government also has given informal assurances of aid to Pakistan's economic development program for 1970-75 and to Iran for assistance beyond the period covered by existing agreements. Other countries that have received Soviet aid in the past--Indonesia, Ceylon, Burma, Cambodia, Somalia, Kenya, Tanzania--probably will be recipients of further assistance. The USSR probably will be especially alert to opportunities to build up Soviet influence in Indonesia and in such Western-oriented countries as Thailand and the Philippines.

7. Soviet aid activity will continue to provide opportunities for the introduction into the Afro-Asian countries of Soviet goods, technicians, designs, and techniques. It will stimulate trade both directly (through the obligation to repay credits in goods) and indirectly (through increased contact and closer relations). Additional trade will be stimulated by repayment of credits for military aid. Soviet trade with the Afro-Asian countries reached about \$600 million in 1965, or 20 percent more than in 1962 and eight times as much as in 1955. This trade can be expected to continue increasing at a moderate rate during 1970-80. As in the past, trade with India probably will account for much of the rise in Soviet trade with the Afro-Asian countries.

8. Although China's future is clouded by the current political and economic disturbances, a program of aid and trade seems likely to occupy a prominent place in its relations with Afro-Asian countries during 1970-80. Chinese efforts probably will be much smaller than the Soviet program, however. China will continue to have only a fraction of the USSR's economic capability to support aid programs and develop trade with the Afro-Asian countries. China's great concern with Communist ideology might prompt it to be more selective than the USSR in its choice of aid clients.

9. China's extensions of economic aid of \$500 million to the Afro-Asian countries since 1956 represent about one-half of total Chinese extensions. Of this total, roughly 60 percent remains to be delivered. The Chinese effort has been focused on Burma, Cambodia, Indonesia, and--more recently--Pakistan. Except for Pakistan, there is a virtual hiatus in its programs in all of these countries because of political reverses or deteriorating relations. Resolution of internal Chinese political problems should, however, eventually permit the Chinese aid program to regain its earlier momentum and even to expand to new levels during 1970-80.

Estimate Two

What are the possible maritime objectives and activities of the Soviet Union for the period 1970-80, particularly with reference to the Indian Ocean and Western Pacific?

1. Soviet maritime objectives provide for increased activity for both the Soviet merchant fleet and the fishing fleet in the Indian Ocean and Western Pacific during the period 1970-80. Soviet plan data indicate that the Soviet merchant fleet will more than double in tonnage between 1970 and 1980. Because Soviet foreign trade is planned to increase at a significantly faster rate, the relative share of Soviet seaborne trade carried by the USSR's own ships in 1980 probably will not be any greater than the 50 percent carried in 1966. The tabulation below presents official plan goals for the fleet and its performance in 1970, the final year of the current five-year plan, and tentative plan goals for 1980.

<u>Year</u>	<u>Fleet Size 31 December (million DWT)</u>	<u>Cargo Turnover (billion ton-miles)</u>	<u>Cargo Volume (million metric tons)</u>
1966	9	240	130
1970 Plan	13	380	190
1980 Plan	27	570	380

2. The USSR has not indicated what geographic areas will receive the impact of increased merchant fleet activities. If present trends continue, Soviet merchant ships in the following trades should be increasingly active in the Indian Ocean and Western Pacific: grain from the west coast of Canada to the Soviet Far East; coal and wood from the Soviet Far East to Japan; general cargo from the Black Sea to Indonesia, Ceylon, India, and North Vietnam; pig iron from the Black Sea to Japan; petroleum from the Black Sea to India, Ceylon, Burma, Japan, and North Vietnam; and wood, cellulose, and paper from Sakhalin to Cuba, India, and Europe.

3. The USSR also will continue to expand its fishing activities rapidly in the decade 1970-80. The increased catch of fish will permit a rise in domestic consumption and expansion of exports. Also the USSR is likely to benefit from aid to fishing industries of developing countries.

4. The USSR is one of the leading fishing countries in the world, ranking only below Peru, Japan, and possibly Communist China. In the past 16 years the Soviet fish catch (live weight) more than tripled from 1.8 million metric tons in 1950 to 6.0 million metric tons in 1966. During this period the USSR was able to reverse its position as a net importer of fish while increasing the consumption of fish from 7.0 kilograms per capita in 1950 to 12.9 kilograms in 1966.

5. The current level of the Soviet fishing industry has been achieved by building the largest and most modern fishing fleet in the world and by aggressively moving into the major international fisheries. The Soviet fishing fleet in 1964 numbered some 20,000 vessels of about 4 million gross register tons and 3.5 million horsepower. Several hundred large refrigerated trawlers and base ships that can operate thousands of miles from home ports form the backbone of this fleet.

6. The Soviets plan to increase their fish catch by 1970 to 9 million metric tons or about 50 percent above the 1966 level. To meet this goal they plan to add about 1,500 ships to their fishing fleet, concentrating on ships capable of operating continuously at sea for three to four months. Port facilities are being improved, and an extensive research program to discover new fishing areas and to develop new fishing gear and techniques is in effect.

7. The Soviet position in world fishing should have improved further by 1980. In the 1970-80 period, the Soviets probably will continue their aggressive campaign to play a leading and ~~perhaps~~ dominant role in international fishing. The fisheries in the Pacific and Indian oceans,

especially the former, are expected to provide an ever growing share of the Soviet fish catch. In 1965 the Pacific Ocean provided about 1.8 million metric tons or 32 percent of the Soviet fish catch and is expected to provide about 3 million tons or 33 percent of the catch by 1970. More than 100 large trawlers--about double the present number--are to be operating out of Soviet Far East ports. Large fishing ports are under construction at Petropavlovsk, Nakhodka, Vladivostok, and Kamchatka to provide processing and servicing facilities, which currently are bottlenecks to expansion. Fishing activities are to be greatly extended into tropical and subtropical waters.

8. The Indian Ocean, where the USSR began fishing operations only in the early 1960's, currently is of little importance to Soviet fishing. The catch in 1965 was a mere 65,000 tons, and the 1970 plan calls for only 190,000 tons or 2 percent of the total planned catch. The Soviets, however, apparently consider the Indian Ocean to be a potentially lucrative fishing area. A considerable research effort is being devoted to the Indian Ocean to discover and develop new fishing grounds. Furthermore, the Soviets have initiated fishing agreements with a number of countries having access to the waters of the Indian Ocean, including Ceylon, Egypt, Somalia, and India. These agreements generally give the Soviets permission to carry out feasibility studies, and, in some cases, to build fishing port facilities, which will provide the Soviets with nearby bases to exploit any potential discoveries. Currently, Soviet trawlers in the Indian Ocean must be supported from distant bases in the Black Sea or the Soviet Far East.

